

BENCHMARKS

VOLUME 6 NUMBER 7

NORTH TEXAS STATE UNIVERSITY

JULY/AUGUST 1985

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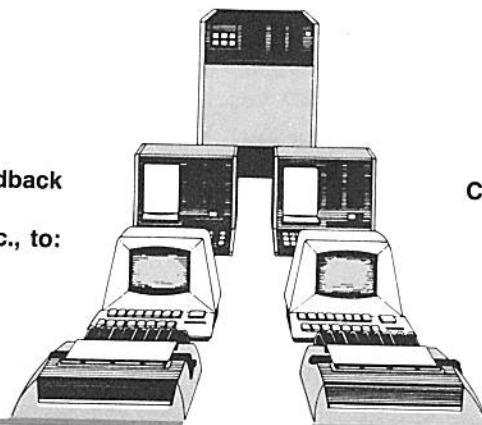
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BENCHMARKS Reader/User feedback is encouraged.

Send all letters, suggestions, etc., to:
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SERVICES AVAILABLE TO USERS OF THE NTSU COMPUTING FACILITIES

The NTSU Computing Center is located in the Information Sciences Bldg., Room 119. Telephone: (817) 565-2324. HELP DESK phone: 565-4050.

BENCHMARKS QUESTIONS/CONTRIBUTIONS, ETC. - Claudia Lynch

INFORMATION & ID CODES; DISK SPACE PROBLEMS - Carolyn Goodman

PRE-RESEARCH COUNSELING; STATISTICAL/RESEARCH SUPPORT - George Morrow, Scott Barber, Claudia Lynch, Dave Molta, Panu Sittiwong

STUDENT PROGRAMMING PROBLEMS - CSC Dept., GAB Room 542A; BCIS Dept., BA Room 152

JCL PROBLEMS; PASSWORD & OPERATING SYSTEM PROBLEMS; COMMUNICATION/TERMINAL PROBLEMS - Help Desk

DATA ENTRY & KEYPUNCH; TEST SCORING & ANALYSIS - Betty Grise

ADMINISTRATIVE APPLICATIONS - Coy Hoggard

PRINTOUT RETRIEVAL - RJE Operators

DIALING UP NTSU COMPUTERS OVER THE TELEPHONE

Phone numbers for the Local Area Network (LAN) are:

300/1200 BAUD: (817) 565 - 3300, 3499
300 BAUD: D/FW METRO 429 - 6006

The numbers that will accept either 300 or 1200 baud communications have an autobaud feature that requires the user to hit the **RETURN** key repeatedly until the receiving modem can determine the appropriate baud rate. The METRO telephone number is for 300 baud communications only. After a communications link has been successfully established, the user will receive the **#** prompt. At this point, it will be necessary to issue the appropriate **CALL** command to connect with a computer.

CALL 8040 will connect with the NAS//8043 (for
8050 MUSIC access)
8060

CALL 3270 will connect with the NAS/8043
3280 through the 3270 protocol converter

CALL A780 will connect with VAX-A
CALL B780 will connect with VAX-B

CALL 2000 will connect with the HP-2000

NTSU CABLE SYSTEM SCHEDULE

The current configuration of the NTSU cable system is as follows:

Channel 8 — Tager microwave channel. Carries broadcasts to and from NTSU to other links in the Tager network.

Channel 10 — NTSU Computer System Status Monitor (SSM). Displays the current status of the NAS, VAX and HP computer systems supported by the Computing Center.

Channel 9—NT Daily. Broadcast originates from the NTSU Journalism Department.

Channel 12—Cox Cable. Currently broadcasts Cable News Network (CNN), unless a special program is requested.

Special broadcasts to and from classrooms, etcetera can be arranged by contacting the Media Library (565-2484).

HOURS FOR NTSU COMPUTER ACCESS AREAS

SEMESTER BREAK: August 17 - September 1, 1985

Location
GAB 550C
College of Business
ISB 110 Terminal Area

Computing Center RJE

Status
CLOSED—Re-Open 8 a.m., Sept. 2
CLOSED—Re-Open 8 a.m., Sept. 2
OPEN 8 a.m. - 5 p.m., Aug. 19-30
CLOSED Aug. 31 - Sept. 1—Re-Open 7:30 a.m., Sept. 2
OPEN 8 a.m. - Midnight, Aug. 19-23, Aug. 26-30
OPEN Noon - Midnight, Aug. 24, 25, Sept. 1
Re-Open 7 a.m., Sept. 2, 7 a.m.

NEW POLICIES,
PROCEDURES,
AND OTHER
IMPORTANT
STUFF

The Computing Center's requested budget for fiscal year 1986 has been cut by approximately 80 thousand dollars, thus forcing us to make some reductions in our expenditures. Naturally, the first choice in expenditure reduction would be to eliminate *things*, not people, and hopefully, not services. With this thought in mind, then, the following software reductions have been proposed (If you have a *very compelling* reason why an item listed below should not be eliminated, please contact Bob Brookshire, Manager of Academic Computing [365-2324] IMMEDIATELY).

<u>Software</u>	<u>CPU</u>	<u>Action</u>	<u>Savings</u>
VS/BASIC	8043	Replace with Waterloo/BASIC	
SAS/ETS on VM/CMS	8043		\$4,000
SAS/OR on VM/CMS	8043	Drop	\$1,000
Waterloo/WATBOL	8043	Drop	\$1,000
Waterloo/WATFIV	8043	Drop	\$ 600
COBOL	VAX	Drop	\$ 900
Datatrieve	VAX	Drop	\$ 444
SAS/ETS	6650	Drop	\$ 720
RAQL	8043	Drop	\$ 500
Waterloo/PROLOG	8043	Drop	\$ 600
			\$ 500

<u>Software</u>	<u>CPU</u>	<u>Action</u>	<u>Savings</u>
ADA	VAX	Buy from Digital instead of third-party vendor	
Scheduling System	6650	Cut	\$12,000
Other:			\$30,000
Computing Council	—	Software Committee budget cut	\$18,000
Office Automation	—	Software budget cut	\$10,000

TOTAL DECREASE: \$80,264

New Version of MUSIC to be Installed for Fall Semester

Hold on to your CRTs (or whatever that is you're doing your computing on these days), a new version of MUSIC is coming in the Fall - MUSIC/SP. For those of you savvy IBMers, your hunch was right, SP stands for that ubiquitous IBM term System Product, and signifies the purchase of the MUSIC operating system by IBM. There are lots of bells and whistles in this version, but those-in-the-know tell me that the basic system is the same. Don't be alarmed if the sign-on screen looks different, it still requires the same identification information it always did. One major change, unless, perhaps, you are a veteran CMS user, is that the SAVE command now does what the FILE command used to do and vice-versa. Got that ??? Anyway, you will be hearing LOTS more about MUSIC/SP for a long time to come. Read on for more info ...

Conversion to MUSIC/SP Version 1.0

By Janice Green, MUSIC Coordinator and Steve Glick, MUSIC Technical Support

As mentioned earlier, the Computing Center plans to convert from MUSIC 5.2 to MUSIC/SP release 1.0 the morning of Sunday September 1, 1985. MUSIC/SP is the result of a 2 year effort on the part of McGill University and IBM, and offers significant improvements over the older (5.2) version. The Computing Center has been running MUSIC/SP in a test environment since July 15, and we have found it to be superior to 5.2 in many respects.

Simply stated, MUSIC/SP is a better product. Despite rumors which have been circulating at an alarming rate, however, we currently have NO plans to reintroduce, at a later date, the older MUSIC 5.2 and call it CLASSIC MUSIC. But seriously, folks ...

The acronym MUSIC no longer stands for McGill University System For Interactive Computing; the acronym has been changed to MUSIC/SP which now stands for Multi-User System For Interactive Computing/System Product. MUSIC 5.2 was what IBM called an Installed User Program - they marketed it, but offered minimal support. The support was left primarily up to McGill University. MUSIC/SP is now an IBM Program Product; it is fully supported by IBM, and will be marketed to industry. We understand that several large corporations have already expressed an interest to IBM in MUSIC/SP, primarily with respect to the new TODO facility which is discussed below.

All of the features discussed below are documented in the MUSIC/SP Users guide, and the MUSIC/SP TODO Guide, both of which should be available in early September. We plan to provide sufficient documentation to facilitate the use of MUSIC/SP if the manuals do not arrive in time.

One important note: While TTY or ASCII terminals will be supported as they always have been, the new MUSIC really stands out with 3270 terminals (with CALL 3270 or the PCWS software described below). If you have not yet begun using 3270 mode, perhaps this is a good time to become familiar with it. The Computing Center plans to offer short-courses on 3270 usage in the Fall.

THE ONE MAJOR DIFFERENCE between Version 5.2 and MUSIC/SP which might cause a bit of confusion is that the function of the editor commands 'File' and 'Save' have been reversed: 'Save' requests that MUSIC update the file and return to the editor, while 'File' requests a permanent update of the file and exit from the editor to the *Go mode. This has been done to conform to an (IBM) industry standard. Read on for a list of other changes.

Some of the more significant enhancements and changes over 5.2 are:

* Time, Office, and Documentation Organizer (TODO)

TODO will keep your calendar, spell-check a SCRIPT document (with full screen correction of words which are not contained in its 70,000 word dictionary), and also make it easier for non-programmer types to 'get around' in MUSIC. Functions such as the creation of new files and the updating of existing files are all done from a full-screen menu.

* REXX (Restructured Extended Executor) is available.

REXX is a high-level structured programming language with which you might write a program, or directly issue MUSIC commands. We will highlight features of REXX in future issues of *Benchmarks*, but here is a short example, just to give you a feel for how handy and powerful REXX is.

```
/LOAD REXX
/* Calculate a factorial */
Parse Arg Num Rest
  If datatype(num,'W') = 1 then Do
    Say 'You must give me a whole number'
    Exit
  End
Say 'The Factorial of ' num ' is ' Fact(num)
exit
```

```
Fact: Procedure
  Arg Num
  if num = 1 then return 1
  temp = fact(num-1)
  return num*temp
```

If you wanted to execute, for example, 3 MUSIC files consecutively, you could use the REXX program:

```
/LOAD REXX
/* Execute the MUSIC files names 'FILE1', 'FILE2', & 'FILE3' */
'FILE1' /* This is the same as typing FILE1 from the *GO Mode.*/
'FILE2'
'FILE3'
Say 'All done executing the files'.
```

REXX gives Music capabilities which were previously unavailable. Look for REXX features in future issues of *Benchmarks*.

* The VS FORTRAN compiler will be available.

VS/FORTRAN, the 1977 standard will be available when we convert to MUSIC/SP. FORTRAN 77 supports the CHARACTER data type, and many other enhancements over the older 1966 standard (FORTRAN IV).

* 20 new subroutines to perform string handling and data conversion have been added.

* The HELP facility provides full screen access to HELP text on 3270 type terminals.

* Personal Computer Workstation Support (PCWS)

PCWS makes a IBM/PC or compatible an integral part of MUSIC. Error correcting file transfers are supported, as well as 3270 Protocol conversion in the PC. This means that you would CALL 8040 rather than 3270 when using PCWS. Whenever a full-screen application is sent to the PC, the PC switches itself from ASCII mode to 3270 mode. It is really quite an impressive communications package. We expect that a version of PCWS will be available for the TI/PC in the near future.

* The Mailbox facility will no longer be available. (The MEMO facility should be used instead.)

* The MSG facility has been renamed TMSG (for Terminal Message). You can now use the command TMSG OFF to prevent another user from sending you messages (if, for example, you were listing a file at a printer and didn't wish to be interrupted.) TMSG ON re enables message receiving.

* MUSIC/SP implements a true multiprogramming environment with the ability to run multiple user jobs concurrently in main storage without having to swap users either to disk or main storage. This means that system performance should improve.

* The MUSIC IUP /INPUT command is now replaced by a program that is functionally similar in operation. This new program exists as a conversion aid for those users who depend on this command. (The Context editor provides a superset of this function and should be used instead.) Differences between the old and the new commands require that users on non-3270 type terminals wait for the new INPUT prompt before entering lines to the file. This prompt should occur very soon after the command is entered but there may be a slight delay here compared with the IUP system. The size of the input file can now be considerably larger. This input file is preserved between sessions. Multiple users signed on with the same 7 character sign-on code will have their input file mapped to the same name.

* The /UPDATE facility is also handled in the same way as the /INPUT command. It, too, is provided for compatibility purposes as the editor provides much more function.

* Users will notice some differences in the error message texts but in most cases the changed message should convey more useful information.

* The new system supports 8 character passwords.

* The syntax of PROFILE commands has changed, and some keywords have been added or modified. The new command items are of the form "keyword(value)" rather than "keyword=value". Also, old commands of the form "OP=option" must now be entered as "option" without the "OP=" keyword.

* The Subset BASIC compiler is no longer available.

NOTES ON GETTING SIGNED-ON: When signing on through a 3270-type terminal, you will first see the MUSIC/SP Logo. Press the ENTER key to go to the sign-on screen. The screen will have the cursor positioned at the place where you should enter your User ID (The /ID part will have already been filled in for you). Type your ID, press the TAB or New Line key, which will position the cursor at the PASSWORD field, enter your password, and THEN press the ENTER or RETURN key to become signed on.

Correction on Procedure For Generating the SHAZAM Manual

It turns out that the DSN parameter needs to be overridden on the SYSUT 2 line of the setup given to generate the SHAZAM Manual in last month's *Benchmarks*. The following setup is the one you should follow to print the manual.

```
// ..... Valid JOB Card ....
//EXEC STORDATA
//SYSUT2 DD SYSOUT=(A,,TN01),DCB=RECFM=FBA,DSN=
//SYSUT1 DD UNIT=TAPE9,LABEL=(9,SL),VOL=SER=104328,DISP=OLD,
//                               DSN=SHAZAM.LIST
```

BMDP Upgraded

By the time you read this, BMDP will have been upgraded to its latest incarnation, the 1985 Release. The manuals are available in the University Store. Following are a list of changes and additions effective as of this release. These were taken from the May 1985 issue of the BMDP Statistical Software Inc. Newsletter - *Communications*. Note: the changes to BMDP after 1983 and before the 1985 release are described in Appendix F of the 1985 manual.

NEW FEATURES

BMDP Instruction Input - In arithmetic paragraphs (TRANSF, FUN, etc.) the character / is used both as the "divide" and "end-of-paragraph" symbol. In order to enhance detection of end-of-paragraph, the sequence digit-period-slash is now interpreted as "end-of-paragraph," while digit-slash is treated as "divide." Hence, if you intend to divide a number, say 3, by A, state it as 3/A, not as 3./A.

Data Input - The statement FILE=CONTROL. in the INPUT paragraph tells BMDP programs that the data file is to be read from the same file as the BMDP instructions. This feature can be used when BMDP instructions are read from a file other than the primary input source.

The TRANSFORMATION Paragraph - When ADD=NEW, is in effect, a newly defined variable may be referred to as X(#), but only after the variable has been defined by name. The symbols +, -, and = may be used instead of LT, GT, and EQ respectively. The NONB function is no longer available.

Scatterplots - Scale computations for plots have been improved.

Program Specific Changes - the following programs have been changed in some way: 2D, 6D, 9D, 4F, 1L, 2L, 4M, 7M, KM, 2R, 3R, 4R, AR, LR, 2T, 1V, 2V, 3V. If you are planning on running any of these programs, it would be wise to consult the new manual before proceeding with your analysis.

It's USERID Renewal Time!!!

If you possess an individual faculty, staff, or student USERID, it is now time to renew your account for the coming fiscal year. USERIDs will become inactive September 1, 1985; therefore, you will need to complete a USERID Request Form indicating that you wish to renew your already existing account and specifying your USERID number. If you renew your account promptly, you will see no noticeable changes in your account, and your USERID will then be active thru August 31, 1986.

USERID Request Forms can be obtained from the Computing Center, Information Science Building, Room 119. Should you need further assistance, call Carolyn Goodman on Ext. 2324.

Local Area Network Update

By Tom Madron, Manager of Computer Services

Some of our users have recently indicated some interest in an update on the status of the NTSU Local Area Network, especially in connection with communications external to the Denton Campus. The Computing Center does provide a small brochure, which is updated yearly, that contains some of this information as well as a description of current network services. That brochure, entitled, *The Local Area Network at NTSU*, can be obtained from The Computing Center reception area, ISB 119.

The original proposal for a Local Area Network (LAN) was submitted to the Computer Steering Committee on February 1, 1982. That proposal, the culmination of about six months of intensive study and research, outlined the system we finally installed and are currently using. A broadband system (based on CATV technology) was selected because NTSU had the need for both video and data communications. At the present time NTSU uses the CATV system for both purposes (see the television schedule at the front of this issue of *Benchmarks*).

On campus the LAN supports an extensive academic network running at 9600 bps. We might note that many universities still have only 1200 bps on-campus communications. In addition, also running over the CATV system, is an extensive administrative network based on IBM's 3270 networking techniques.

The CATV system is also connected to the Denton cable system so that the campus can provide television programming to Golden Triangle Communications. We also obtain programming from Golden Triangle for redistribution around the campus on our system. If we were in Dallas, Ft. Worth, Richardson, or several other locations in the Metroplex with existing two-way community cable systems, we would be able (at least technically) to provide data communications at high speed via CATV.

Unfortunately, Golden Triangle maintains only a one-way CATV system and has been unable to reengineer its system. Early in the planning process of the LAN it was hoped that Golden Triangle would convert to a two-way system, but since that time Golden Triangle has undergone several changes in management and was recently sold to another parent CATV company. The original planning for the LAN did not, of course, depend on Golden Triangle's situation other than for providing television (video) connections.

The other important and exciting external connection currently in process is our relationship with the TAGER microwave network in the Metroplex. The NTSU CATV system is now connected to TAGER and NTSU is originating TAGER educational programming (video). The entire connection is not yet complete, even for video, but progress is occurring. In the Fall TAGER and NTSU will be conducting experiments to provide high speed (what AT&T calls T1 speeds) data communications with the Metroplex, especially North Dallas and Ft. Worth (the Texas College of Osteopathic Medicine). If the testing phase proceeds as planned, and is successful, we will begin running voice and data across TAGER on a production basis by mid-1986.

The NTSU Local Area Network provides an efficient and cost-effective means for communications across the campus. In addition, it will provide the basis for external communications as well. Limitations on funding, among other things, will limit the speed at which we can proceed on expanding network services, but the NTSU LAN is currently being used for a wide variety of purposes. If you should have any further questions concerning the LAN that we can answer in these pages, please address an inquiry to the Editor of *Benchmarks*.

Initial Report on Survey Findings

By Scott Barber, Academic Computing Staff

After some delay, the results of the Computing Center survey are starting to roll in. The databases for the two survey samples have been created and some descriptive analyses have begun. These samples responded with many comments and criticisms for our consideration.

The data are organized into the following areas: identification with NTSU, experience with computing, use of Computing Center services, information dissemination, technical issues, on-line database services, and research computing. This article presents some descriptive information on the respondents, their experience with computers, and some of their perceptions of our services. Future articles will provide more in-depth information in the areas discussed here along with information on topics excluded from this report.

Respondents

The respondents are split almost equally between individual account holders and classroom account holders, with 248 individual ID questionnaires (mostly graduate students and faculty) and 242 classroom ID questionnaires (mostly undergraduate students). This resulted in a 38.9% response rate for individual IDs and 34.6% for classroom IDs.

The individual ID respondent population has an almost equal number of graduate students and full-time faculty (47% and 45%), with a few part-time faculty and other positions making up about 8% of the population. The classroom account population is 70% undergraduates. Exactly half of the total classroom ID population are Seniors and 16.5% of the total are Juniors. Most of the remaining 33% are graduate students.

Experience

On the average, the respondents have 2.4 years of experience on mainframe systems at NTSU and 3.1 years on other mainframes. As would be expected, individual account holders have more experience on mainframes than do classroom ID holders (3.2 vs. 1.7 years at NTSU and 4.0 vs. 2.0 years elsewhere). This pattern is roughly the same for microcomputer experience, except that both groups have less experience with micros than with larger systems.

Holders of individual IDs reported logging onto a mainframe system 5.9 times a week on average, while classroom ID respondents reported signing on 4.6 times. The standard deviation for the total population is a relatively large 6.1, indicating wide variability and a skewed distribution (note that one standard deviation below the mean is less than zero). Many persons log-on less than once per week, while there are a few others who reported signing on more than 20 times a week.

About one third of the total population reported being moderately familiar or very familiar with TI (32.4%), IBM (33.3%), and Apple (29.8%) microcomputers. Seventy-one persons (14.5%) reported this level of familiarity with Kaypros, and 24.1% said they were at least moderately familiar with "other" types of micros.

Perceptions of Computing Center Services

Perceptions of several computing services were solicited and obtained, including short courses, *Benchmarks*, public access terminal consulting, documentation, etc. Four areas to be improved were presented to respondents to be ranked in order of importance to them. These areas were short courses, documentation, formation of more user's groups, and Computer Assisted Instruction (CAI). An "other" category was also provided. The area with the lowest overall mean ranking (the highest priority, mean = 2.1) was improvement of documentation. The written comments gave further indication that many users feel documentation should be more extensive and more accessible.

After documentation improvement, perceptions of which areas should be improved differed depending upon the type of ID held by the respondent. Individual ID holders felt that short courses should be focused on for improvement before CAI, and classroom ID holders generally felt CAI to be preferable. Analyses have not been conducted to determine if this is statistically significant, and more detailed examination will explore this question further.

On the "1 to 9" scale (1-very slow, 9-very fast), the mean ratings of response time for MUSIC and turnaround time on the laser printer were below the "moderate" level of 5. The communications equipment (PCUs, dial-up ports, etc.) rated right at "moderately reliable," and VAX response time evoked a mean rating of 5.13. The respondents rated the effectiveness of the Computing Center in resolving technical problems at 5.22 on the average.

The overall population was split almost perfectly into thirds regarding their reading of *Benchmarks*. One third reported reading most or all issues. Another third said that they read some issues, and the other third reported never reading it. Of those that read it, the average usefulness rating was 4.6, with 5 being "moderately useful". Some suggestions included putting *Benchmarks* on-line, including more articles on statistical applications, more visible distribution, and more examples.

On a different item dealing with information dissemination, the mean rating by individual ID holders (classroom respondents did not answer this item) of the levels of interdepartmental communication was 3.8, the lowest of all ratings on the questionnaire. The need for better dissemination of information concerning computing facilities and services is clearly expressed in this result.

Plans

Academic Computing staff will be looking more closely at these data in the next few weeks to determine services which may deserve more concentrated effort, and examine ways to improve our effectiveness. As a result of this survey, there are already plans to provide a list of the public documentation available in the various terminal rooms. This would provide a place to start for users who feel they are groping for that obscure manual. Also, there are plans for making *Benchmarks* more visible in the public access areas and for putting it on-line.

Future articles will present more in-depth analysis and the effects of the data on academic computing priorities.

Staff Publications

Thomas Wm. Madron - Manager of Computer Services, Robert G. Brookshire - Manager of Academic Computing, and C. Neal Tate - Chairman of Political Science, have added a new book to the Sage University Paper Series: Quantitative Applications in the Social Sciences. The title of their book is *Using Microcomputers in Research* and it became available to the public in June of this year.

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*   MICROCOMPUTERS   *
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Purchasing Diskettes With University Money

In last month's *Benchmarks*, Mike Flanery of the Microcomputer Maintenance Shop stated that he would not recommend using Control Data brand diskettes. This poses somewhat of a problem for people purchasing diskettes with University money (i.e. with a University purchase order). In the past, Control Data diskettes were listed on the State Price Contract, thus making it virtually impossible for State agencies to purchase another brand. Currently, however, no diskettes are on the State Price Contract. This is expected to change, although no one here at the University knows exactly when.

The procedure for purchasing diskettes at the departmental level is still the same as it has been in the past. A department issues an interdepartmental order to either Office Supply or the Center for Instructional Services (CIS), who in turn, supplies them with their diskettes.

MicroBits: Micro News You Can Use

By Mike Flanery, Manager of the Microcomputer Maintenance Shop - GAB 529; Ext. 2387

RAM Upgrade Options

Many TI PC users are discovering that some of the programs they want to use require more than the 256k bytes of RAM that the TI PC with the standard TI RAM board contains. Below I have attempted to summarize the RAM expansion options for the TI PC.

64k	TI RAM Board (slot 1 only)
	OR
	Persyst MultiFunction Board (slot 1 only)
256k	TI MultiFunction Board (any slot)
	Persyst MFB RAM-Pak Add-on
	TI Primary RAM Upgrade (any slot)
512k	TI MFB RAM option
	TI Secondary RAM Upgrade (add on to Primary)
768k	(maximum amount of memory for the TI PC)

Both the TI and Persyst MFBs have a battery powered clock on them so that you don't have to type in the date and time. They also have serial port(s) available. If you are ordering a new machine or are wanting to upgrade from 256k, you might want to consider the TI MFB.

Backups

It always surprises me when I get a call from someone who has lost all of their data because their diskette "crashed." This type of catastrophe is truly terrifying when you think of how many hours you have spent entering that data onto the diskette. Don't let this happen to you. Always remember that floppy disks are *temporary* storage devices. You should have backups of everything you use with any degree of regularity. Here in the MMS, we backup our diskette that contains our Service Request database daily. I have five diskettes labeled 'Monday' through 'Friday' that I backup this database file onto every afternoon. The cost of the diskettes is minuscule compared to the cost of entering (or re-entering) the data. Also, when you put a diskette into service, put the date on the label. If it is a diskette you use every day, then use it for a month or 6 weeks and then replace it with a fresh one and throw the old one away. Refer to last month's *MicroBits* for some guidelines for using diskettes.

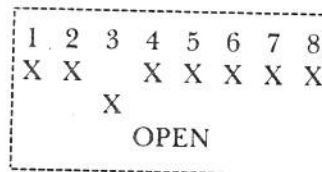
TI 855 Font Modules

These handy little pieces of hardware seem to cause confusion with some users. There are three slots in the front of the machine for these modules so this means that you can leave up to three modules plugged into the machine all of the time. The font modules won't do you any good sitting in a drawer. HOWEVER, DO NOT REMOVE OR INSERT THE FONT MODULES WHILE THE PRINTER IS TURNED ON. Also, each different font has a different default character pitch, so if you select a font with the MODULE SELECT button on the 855 keypad, the character pitch may automatically change.

Getting Wordstar to Work with Your TI 855 Printer

Many people have experienced a number of different and somewhat sporadic problems with their TI 855 printers when printing Wordstar files. The problem only appears when Wordstar has been installed for the TI 855. From this it can be assumed that the printer "driver" that Wordstar provides for the 855 does not contain the proper control codes to operate the 855. The following is a description of how to install the 855 as a "Custom Printer" so that you can take full advantage of your TI 855 printer.

In order to install a printer, you must run the Wordstar installation program (Winstall). Before attempting to do this, please read the Wordstar Installation Guide. The purpose here is to provide the values for use in the installation process so that you can utilize your hardware to its fullest. The idea of installing the TI 855 as a custom printer was first mentioned to me by Dr. Benny Copeland of the Accounting faculty. He provided most of the values listed below. These values assume that the DIP switch block is set as shown here. (The DIP switch block is visible when you raise the access door).



From the Winstall Main Menu select D (Custom Installation of Printers). Use the following values to install the printer. Values are given in decimal, but Winstall displays values in hexadecimal. Therefore, hexadecimal equivalents are given in parentheses and are denoted by a lowercase 'h'. For example, the decimal number #27 corresponds to hexadecimal 1Bh.

SELECT (from menu)VALUES TO ENTER

C Printer Name

Custom TI 855

D Initialization

#27 #13 #80 (1Bh Dh 50h) Draft

or

#27 #13 #80 #113 (1Bh Dh 50h 71h) Quality

Select which mode you want to be the default. Winstall will ask you what de-initialization string is necessary. This is strictly up to you—if you choose to have Quality as the default mode, then you might want to have the printer go back to Draft as your de-initialization string. I have my Wordstar set up to print in Quality and I don't have any de-initialization.

SELECT (from menu)

E Overprinting
 F Boldfacing
 G Protocol
 H Driver menu
 J Vertical Motion

K Horizontal Motion

L Print Modes

M Phantom Characters

N Return/Linefeed

O User-define Functions

VALUES TO ENTER

Selecting B will ensure proper functioning of all print modes

Select 2 for best results

Select A for "No Protocol"

Select A for "Parallel"

#27 #30 (1Bh 1Eh)
 (No reset values needed)
 Minimum VMI = 1
 VMI range = 254
 Linefeed = #13 (Dh)
 Reverse Linefeed = #27 #13 (1Bh Dh)

#27 #31 (1Bh 1Fh)
 1/120 inch increments
 Minimum HMI = 1
 HMI range = 254
 Space forward = #32 (20h)
 Backspace = #48 (30h)

Forward = #27 #31 (1Bh 1Fh)
 Backward = #27 #54 (1Bh 36h)

Phantom Space = #27 #47 (1Bh 2Fh)
 (No Phantom Rubout)

Return + Linefeed #13 #10 (Dh Ah)
 Return/No Linefeed #13 (Dh)
 Return/Half Linefeed #13 #27 #85
 (Dh 1Bh 55h)

See text below

The User-defined functions are optional. However, these functions allow you to utilize your 855 to its fullest. Since many of the special features can be accessed directly from the control panel, an example of a useful User-defined function would be one which stopped the printing of the document, caused the printer to go off-line and awaited some action from the operator. In this way, you could have the printing stop whenever you wanted to change line-spacing, character-pitch, or the fonts. One feature that cannot be accessed from the control panel is the expanded printing mode. Therefore, this would be another good candidate for a User-defined functions. Below, I have given some examples of User-defined functions as I would install them for my TI 855.

Function 1	Use PQ to select quality print: #27 #113 (1Bh 71h)
Function 2	Use PW to have the printer wait for operator intervention (i.e., make a selection and then press ON-LINE): #27 #229 (1Bh 77h)
Function 3	Use PE to turn expanded mode on: #14 (Eh)
Function 4	Use PR to turn expanded mode off: #20 (14h)

SELECT (from menu)

P Carriage Roll

Q Character Pitch

VALUES TO ENTER

Roll up carriage #27 #68 (1Bh 44h)
 Roll down carriage #27 #85 (1Bh 55h)

Standard (10 CPI) #18 #20 #27 #122
 (12h 14h 1Bh 7Ah)
 Alternate (12 CPI) #18 #20 #27 #121
 (12h 14h 1Bh 79h)

The Micro-to-Mainframe Link

By Dave Molta, Academic Computing Staff

In recent months, the number of individuals using microcomputers as "smart terminals" to communicate with NTSU computer systems has greatly increased. This comes as no real surprise to us at the Computing Center, since we've been utilizing micros as intelligent work stations for some time. This article will explore the utility of microcomputers as mainframe terminals and present some information you will need if you'd like to try it.

The first major advantage of using a micro as a smart terminal lies in the ability to work in one's own home or office, an environment generally more conducive to thought than a public access area. Of course, a 'dumb' terminal and a modem could also serve this function. It is the second major advantage, the ability to transfer files between micro and mainframe, which really makes micros shine. An SPSS program, for example, can be written using your

favorite word processor/editor and then transmitted to MUSIC to be run. After running it, the results can be saved on a floppy-disk file for output to your printer, or the results can even be merged into a text file to save time in the preparation of reports, papers, or dissertations.

In order to use a microcomputer to communicate with the NTSU Local Area Network (LAN), from which all major academic systems are available, the following hardware and software are needed.

1. An asynchronous serial communications interface
2. A modem (300 or 1200 baud)
3. Communications software

While virtually any microcomputer can be used to communicate with the LAN, an 80-column display and at least one disk drive are highly recommended.

Asynchronous Communications Interface

Some micros, such as the Macintosh and most IBM PC compatibles, come with a communications interface built into the system unit. Others, such as the IBM and TI PCs, require an additional circuit board costing about \$100 which plugs into one of the system's expansion slots. IBM and TI PC owners would be well advised to consider a multifunction board which, in addition to providing a serial communications port, also provides a parallel printer port, memory expansion sockets, and a clock/calendar—all for around \$200. Most asynchronous communications interfaces conform to a standard known as RS-232C and use a standard DB-25 plug to connect to the outside world (the Macintosh, however, uses a different interface configuration).

Modems

Although most modem manufacturers have recently begun introducing high-speed 2400 baud modems, NTSU does not currently have the hardware necessary to take advantage of them, and we are unlikely to acquire such hardware until standards are more firmly established. If you do purchase a 2400 baud modem, make certain it conforms to the Bell 212A standard at 1200 baud and the Bell 103 standard at 300 baud so you can use it with our system at the slower speeds. If you are planning to buy something soon, you probably should stick to 300 or 1200 baud. While 300 baud was the standard not long ago, improvements in chip technology have pushed the cost of a 1200 baud modem under \$200 (and falling). It is certainly possible to be productive using a 300 baud modem, but the slower speed makes it virtually impossible to do full-screen editing since it takes so long to refresh the screen. Unless you're on an extremely tight budget, spend the little extra for 1200 baud. You won't regret it.

Modems for the IBM and TI PCs (also the Apple IIe) come in two varieties: internal and external. Internal modems fit into one of the system's expansion slots and have the serial interface built in. Thus, they can save you the expense of the interface if you don't already have one. They also take up less room since they are attached inside the unit. The major disadvantages of internal modems are that they occupy an expansion slot (sometimes a problem for 5-slot IBM PCs), they are machine specific (if you buy a new machine, you'll have to buy a new modem), and unless you have a separate serial port, you can't connect your computer directly to the Local Area Network (an important factor to consider if you have a portable computer). External modems, on the other hand, are usually connected to the serial port using a standard 25-pin ribbon cable (NOTE: the Macintosh requires a special cable—make sure the modem you buy can use it). They can also easily be used on a variety of micros and you can keep your modem if you switch computers.

Most newer modems are "smart". That is, they are capable of automatically dialing remote computers and answering another computer's call (as well as a 'host' of other features). The de-facto standard for smart modems has been established by the Hayes Smartmodem. Therefore, it is a good idea to get a modem which is Hayes compatible, since the chances are high that your communications software will be able to take advantage of all of its features. However, caution should be exercised when purchasing Hayes-compatible modems; they aren't always 100% compatible. Sometimes, this is not a serious problem, but if you have doubts, try to get a demonstration with the software you plan to use before you buy.

Communications Software

Probably the most difficult choice you will confront in establishing your micro-mainframe link lies in choosing a good communications software program. Two capabilities are crucial if you want to take full advantage of your micro as a smart terminal to communicate with NTSU mainframes. First, the software should be capable of emulating a standard terminal such as a Digital Equipment Corporation VT-100. Terminal emulation is absolutely essential if you plan to do full-screen editing on either the VAX or on MUSIC. Beware of software which claims to emulate a VT-100; the emulation may be incomplete. Again, if you have doubts, ask a dealer for a demonstration or check with the Computing Center before you buy.

The second major consideration to be made concerns the file transfer capabilities of your software. Specifically, if you intend to transfer (upload) files from your micro to MUSIC, you must have a feature known as prompted upload. Since MUSIC gives you a "?" prompt before each line you enter, your software must be smart enough to wait for the prompt before sending subsequent lines. Otherwise, you will receive that nasty message LINE TOO LONG—RETRANSMIT. Your software should be capable of capturing data from the mainframe and routing it either to your printer or to disk for permanent storage. In addition, if you plan to communicate with information services such as Compuserve, your software should support the XMODEM error-checking protocol to insure the

integrity of data transfers. NTSU also offers limited support for Kermit, a more sophisticated error-checking protocol, but only the newest communications software supports it (see the article on KERMIT in the VAX section of this issue).

For users of IBM and TI PCs, the Computing Center recommends CROSSTALK XVI by Microstuf (or their newest product, CROSSTALK Mk. IV). CROSSTALK offers all of the features noted above (although VT100 emulation is only adequate) and is reasonably priced (under \$100 if purchased by mail-order). It is also the top-selling communications software package for the IBM PC and is widely used in business and government offices. The documentation is also quite good, but be aware that the wealth of features makes the package somewhat difficult to learn. On the positive side, however, extensive on-line help is available. Microstuf also has a slightly scaled-down version for CP/M systems such as the Kaypro which incorporates most of the features of the IBM/TI product. Alternative products which have also been shown to perform well include Smartcom II (Version 2.1) and the newest version of VTERM. Unfortunately, neither of these latter two are available for the TI PC.

For users of TRS-80 microcomputers running under TRS-DOS, we recommend TELETERM by Telexpress (also available for IBM and TI PCs). TELETERM performs adequate VT-100 emulation, has extensive file transfer capabilities, and even includes a built-in editor which allows you to modify files without having to exit your communications session. TELETERM is not widely available, so you may have to order it directly from Telexpress, Inc. (609-877-4900).

For Macintosh users, we recommend Apple's Macterminal program. Macterminal offers excellent VT-100 emulation and flexible file transfer capabilities. Please note, however, that since the Computing Center does not actively support the Macintosh and its software products at this time, you should make sure the modem-software is compatible with our system. We will be happy to pass on any information we do have, but it's worth your time to consult a local dealer for a demonstration.

Editor's Note: If you have a University owned PC, contact the Computing Center for further information about Communications software available to you.

Conclusion

Next month, I will present a step-by-step tutorial on transferring files between a microcomputer and both the MUSIC and VAX/VMS operating systems along with some suggestions concerning how you can get the most out of the micro-mainframe link. As always, if you have any questions, give us a call at 565-2324 or drop by the Computing Center between 8 and 5 weekdays.

Report From Office Automation

By Sandy Franklin, Office Automation Specialist

New Software Available on the TI PC!!

Just received the latest price list from Texas Instruments to find that dBASE III and Framework are available now for the TI PC. For departments on the Challenge Grant the cost is as follows:

PN 2311643-0001 dBASE III DataBase Package 50% off \$347.50
PN 2311642-0001 Framework Integrated Package 50% off \$347.50

The Challenge Grant can still be used through September 20, 1985. If you need part numbers or ordering information for any other TI parts or software, please contact the Computing Center for assistance.

Books Available About the TI PC

I have also ordered copies of a couple of books written specifically for the TI PC. I special ordered them from the University Store. They include programs written in BASIC to run on the TI PC.

Business Solutions Using the Texas Instruments Professional Computer, Leon A. Wortman, 1984, ISBN 0-89303-344-8, \$24.50

Programs to Accompany Business Solutions Using the Texas Instruments Professional Computer, (A diskette), ISBN 0-89303-345-6, \$35.00

Using the TI Professional Personal Computer, Kenniston W. Lord, Jr., CDP, 1985, ISBN 0-442-25812-7 \$17.95

Business Solutions includes programs on such varied subjects as: An Alphanumeric Sorting Program, Bar Charts Provide Graphic Displays of Data, How to Determine the Read After-Tax Value of a Pay Increase, etc. All of the programs are written in BASIC, with a few also written in PASCAL.

Using the TI Professional Personal Computer includes chapters on "How Computers Work", "Developing and Manipulating Data", "Graphics", "Disks and Disk Operating System", "Disk Applications", and "A Small Business System." This last chapter, of course, has the BASIC code written out for you to recreate.

Mr. Lord has also written books on *Using the Kaypro II Personal Computer*, *Using the IBM PCjr*, *Using the Compaq Portable Computer*, *Using the IBM Personal Computer*, and other types of computers.

Problems with WordStar Installed for the TI 855 Printer

The "MicroBits" article in this section has a report on how to install a customized 855 printer for use with WordStar. This is well worth the time. If you have been having problems with spacing on your TI 855 printer when using it with WordStar, this customized installation should solve your problem. I have given it to several departments on campus, and they report the problems with the printer have been solved.

Buy - Sell - Trade*FANTASTIC MACHINE*

Philips 3003 Word Processor. Originally \$10,000 - 2 years old. The English Department would like to make an interdepartmental trade for simpler machinery. Call Peg at Extension 2117.

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*   OPERATIONS   *
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Disk Backup Schedules**Backup Schedule for OS/MVS**

OS/MVS disk packs (academic and administrative) are backed up daily, Tuesday through Saturday, from 4-6:30 a.m., and Sunday from Midnight to 3 a.m. A backup of all the operating systems on the NAS machines and their contents is done once every two weeks at some low activity period over a weekend.

MUSIC Backup Hours

A message will be sent to all users signed on to MUSIC approximately 10 minutes before backups are begun. It will be in the form * * MUSIC SHUT DOWN AT xxxx AM - SCHEDULED BACKUP *. To find out the backup hours while signed on to MUSIC, enter HELP HOURS. The following backup schedule is currently in effect:

Tuesday	3 a.m. (for about 3 hours)	Weekly backup
Wednesday - Saturday	4 a.m. (for about 2 hours)	Daily backup
Saturday	Midnight (for about 2 hours)	Daily backup

VAX Backup Schedule

Incremental backups of both VAX systems are performed Monday through Thursday at 4 p.m. Users do not have to log-off, but any files that are open at the time of the backup will NOT be backed up.

Full backups of both systems are done every Friday beginning at 8 a.m. These generally will take all day to complete. Again, users do not have to log-off, but any files that are open will not be backed up.

A "Stand Alone" backup of the system disk is done the third Tuesday of every month, in the afternoon, just before preventive maintenance. This procedure makes a copy of the system disk that can be used to restore its contents if the disk is completely destroyed. The system will be shut down; watch the system log-on message for specific times and dates.

NOTE: No backups are taken on the weekends. Requests for restoration of files should be made via MAIL to the username OPERATOR. Your file can only be restored if it existed before the last backup was done.

NAS/8043 and NAS/6650 Performance Statistics for June

CPU	SYSTEM	SCHEDULED OPERATING HOURS	PLANNED MAINT. HOURS	PLANNED PRODUCTION HOURS	UNPLANNED MAINT. HOURS	PRODUCTION HOURS ACHIEVED	SYSTEM UPTIME
8043	VM/SP3	720	0.00	720.00	18.85	701.15	97%
8043	MUSIC	720	14.05	705.95	19.54	686.41	97%
8043	MVS/JES2	720	0.00	720.00	20.26	699.74	97%
8043	COMPLETA	720	0.00	720.00	20.81	699.19	97%
6650	MVS/JES2	720	0.00	720.00	17.03	702.97	98%
6650	COMPLETEA	274	0.00	274.00	1.70	272.30	99%
6650	ADABASA	720	20.35	699.65	27.49	672.16	96%

System Uptime = (Production Hrs. Achieved)/(Planned Production Hrs.)

Production Hrs. Achieved = (Planned Production)-(Unplanned Maint.)

Scheduled Operating Hrs. = (Planned Maint.) + (Planned Production)

MUSIC Planned Maintenance Hours include 14.05 Hrs. for system backup.

ADABASA'S Planned Maintenance Hours include 20.35 Hrs. for system backup.

The NAS/8043 CPU achieved 100% uptime. The NAS/7360 DASD achieved 100% uptime.
 The NAS/7350 DASD achieved 100% uptime. The NAS/6650 CPU achieved 100% uptime.
 The STC 8650 DASD achieved 100% uptime.

Lost productivity is calculated as the greatest amount of elapsed time that any one of the production systems was unavailable for scheduled operation. Lost productivity hours were contributed to by the following key causes:

NAS/8043 CPU:

Miscellaneous

1. System Shutdown for electrical contractor performing part of HALON installation	20.81 HOURS
GRAND TOTAL FOR NAS/8043 20.81 HOURS	

NAS/6650 CPU:

Miscellaneous

1. System shutdown for electrical contractor performing part of HALON installation:	19.93
2. ADABASA System Tuning/Improvements	8.51
3. ADABASA System Failures	0.60
GRAND TOTAL FOR NAS/6650 29.04 HOURS	

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*   TECHNICAL   *
*   SUPPORT     *
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NAS/8043 Program Hit Parade

The following programs were used the most frequently on the NAS/8043 during the month of June.

TOP TEN PROGRAMS IN TERMS OF FREQUENCY OF RUNS

<u>Program</u>	<u>Description</u>	<u>Number of Runs</u>
1. IEWL	Linkage Editor	5306
2. PGM=*.DD	Compiled Program	5293
3. IKFCBL00	VS COBOL Compiler	4857
4. SCRIPT	Waterloo/SCRIPT	4217
5. IEBGENER	IBM Utility	3066
6. PTPCH	Dataset Lister	2785
7. SPSS	SPSS-X	2182
8. SASLPA	SAS	2050
9. IKJEFT01	Password Change	1263
10. IFOX00	System Assembler	1034

TOP TEN PROGRAMS IN TERMS OF CPU SECONDS USED

<u>Program</u>	<u>Description</u>	<u>CPU Seconds</u>
1. SASLPA	SAS	43783
2. PGM=*.DD	Compiler Program	41599
3. SPSS	SPSS-X	14103
4. SCRIPT	Waterloo/SCRIPT	11225
5. IKFCBL00	VS COBOL Compiler	8878
6. PTPCH	Dataset Lister	4155
7. IFOX00	System Assembler	3393
8. IEWL	Linkage Editor	2240
9. LOADER	System Loader	1124
10. IEBGENER	IBM Utility	1058

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VAX Upgrade

By Ron Brashear, VAX System Manager

Both of NTSU's VMS VAXes have now been upgraded to Version 4.1 of that operating system. The upgrade was necessary because only VMS Version 4+ support VAX Clusters (NTSU's Cluster is scheduled to arrive in September). The Cluster requires no additional software because the operating system extends itself to support the additional hardware and Cluster-wide system processes. The new version of the operating system has many enhancements such as command line editing, a larger set of privileges, expanded system services and runtime library services. Access control lists allow users to make files and directories available to *others* in the "world" without allowing access to *everyone* in the world. New privileges allow faculty write access to their students' accounts.

The upgrade necessitated the simultaneous upgrade of virtually all software residing on the system. MAILNET will not work because Northwestern University does not currently have a version of their MAILNET software that is compatible with VMS 4.1. The rest of the VMS software is functioning properly with the exception of EUNICE, which should be working soon.

KERMIT Files on the B VAX

By Scott Barber, Academic Computing Staff

If you are interested in transferring data from one machine to another, such as from an IBM PC to a VAX, there is available free communications software on the VAX B called KERMIT. KERMIT provides limited VT100 emulation and a very sophisticated file transfer facility. In order to utilize KERMIT, there must be a version of KERMIT available for and loaded onto each of the communicating systems. These KERMITs then "talk" to each other.

The VAX B stores many KERMIT source, object, and documentation files which you may download into a micro. Obviously, in order to download any of these files, you must use communications software which supports file transfer as well. Why get KERMIT at all? The major advantage of using KERMIT is that it supports a very sophisticated file transfer protocol which enables two normally incompatible machines to exchange data with an extremely high degree of accuracy, even across phone lines. This can be particularly important when transferring large numeric data files for which it would be difficult if not impossible to trace down errors in transmission.

After logging on to the VAX B, type SET DEF DRB2:[KERMIT]. This directory contains the bulk of these files. The file VERSIONS.DOC is a fairly up-to-date listing of all the hardware and operating systems for which KERMIT is presently available. There is also a large amount of documentation (filetypes .DOC or .HLP) in the [KERMIT] directory which you will need to select for your particular hardware and print. You can use the LASER utility to print any document file on the laser printer. Enter LASER from the S prompt and answer the questions. (You must have an OS/MVS account on the NAS/8043.)

When you are ready to do your file transfer, execute KERMIT from your machine, and then log-on to the VAX B. To run KERMIT on the VAX, type RUN SYSS\$SYSTEM:KERMIT from any directory on the VAX. Typing HELP from the KERMIT 32- prompt will list the commands available to you.

If you have an MS-DOS microcomputer, but do not have access to a communications package to download KERMIT, bring a formatted diskette to the Computing Center, and we will provide you with KERMIT and the documentation you will need.

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*   I N F O R M A T I O N   *
*   S Y S T E M S           *
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Transitions

Several people will be leaving the Information Systems Staff in the not too distant future. Chris Zeigler is going to be out for the next several months on maternity leave - she does plan to return to work; Greg Nauger is resigning to go to Medical School in San Antonio at the end of July; and John Hooper has accepted a position with M.D. Anderson Hospital in Houston and will leave here sometime in mid-August. We wish them all the best of luck.

Get a "Subscription" to Benchmarks

Benchmarks is a vital link between the NTSU Computing Center and the users of our facilities. It is important for all users of the computing facilities to maintain a file of these newsletters because they contain materials which will periodically update existing documents as well as information and suggestions on uses of OS/MVS, MUSIC, the VAX 11/780's, the HP-2000, and other resources available to NTSU students and faculty. To facilitate the dispersal of Benchmarks, *** **FREE** *** subscriptions are available. To receive yours, send the following information to us either by "snail mail" (the post office or campus mail) or electronically, through the MEMO facility on MUSIC to FA18.

Name _____

Mailing Address _____

Name _____

Mailing Address _____

PLEASE GIVE A CAMPUS ADDRESS (NOT BOX) IF POSSIBLE! - It's Cheaper!!

PLEASE RETURN TO:

Academic Computing Services
The Computing Center
NT Box 13495
North Texas State University
Denton, TX 76203